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# AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM(U)

(THROUGH 14 APRIL 1967)

**APRIL 1967**

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Prepared Jointly by  
The Central Intelligence Agency  
and  
The Defense Intelligence Agency



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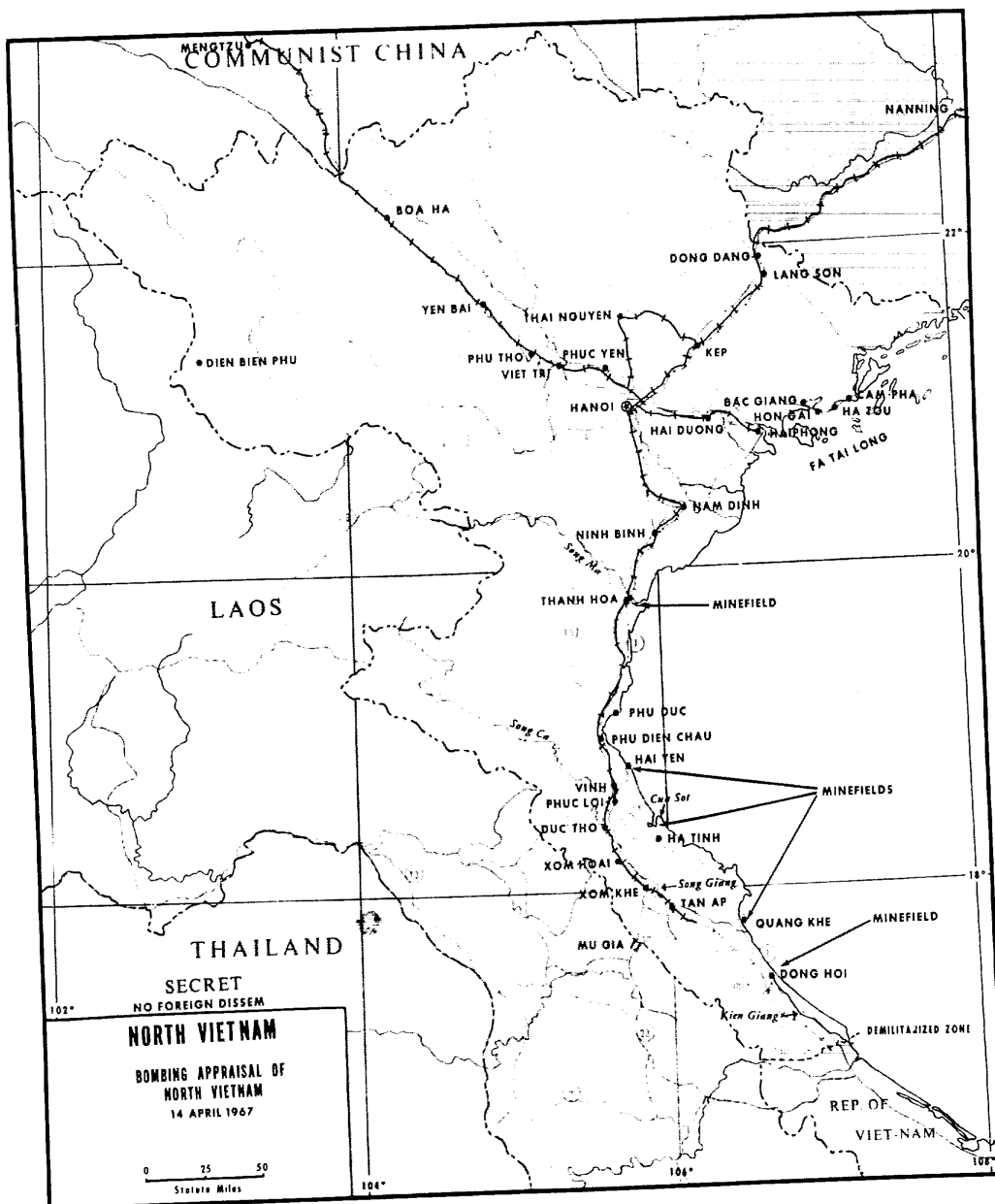
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## AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM THROUGH 14 APRIL 1967

### FOREWORD

This report is prepared on a monthly basis at the request of the Secretary of Defense for an evaluation of certain effects of the ROLLING THUNDER program. The report covers three general areas of concern: Effects on Military Targets; Leadership and Public Reactions; and Effects on the NVN Economy. The discussion of political effects is limited to those developments within North Vietnam which relate to Hanoi's attitude toward continuing the war and the effects the ROLLING THUNDER attack has on civilian morale in North Vietnam.

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AN APPRAISAL OF THE BOMBING OF NORTH VIETNAM  
THROUGH 14 APRIL 1967

SUMMARY

1. (S/NFD) The improved flying conditions during late March and early April permitted a significantly higher level of air activity. The preponderance of air strikes was directed against lines of communications (LOC's). Attacks against the highway system increased and a greater amount of damage was inflicted. Interdiction activity against rail and waterway targets increased only slightly over the previous period. Damage inflicted on the economy increased significantly. The most telling damage resulted from the strikes against electric powerplants.

2. (S/NFD) Attacks against rail facilities remained at essentially the same tempo as during the previous reporting period. The Hanoi-Haiphong and Hanoi-Dong Dang lines remained fully operational during the month. In the south, the Hanoi-Vinh line was subjected to intensive air attacks, and the line was probably closed for through service throughout the month. However, limited operations were possible between major points of interdiction. The cumulative effects of the air strikes have severely reduced the throughput capacity of the rail line south of Hanoi. The turn-around time for equipment has increased and the use of equipment is less efficient.

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3. (S/NFD) Strikes against the highway system reached a peak during the first week of April. However, the road network directly related to the military logistics support effort has been maintained in relatively good condition with truck traffic possible on nearly all routes. The bulk of the interdiction effort was against the principal roads south of the 20th Parallel.

4. (S/NFD) The wide dispersal of vehicles and the inefficient operating conditions imposed by the air campaign in the southern part of the country are believed to be taxing present truck transport capability. It is estimated that at least 2,000 trucks are committed to support the military supply effort through the North Vietnam Panhandle and the limited local civil requirements.

5. (S/NFD) Most of the waterborne activity during the period was reported below the 20th Parallel. North Vietnamese efforts to minimize loss and damage to watercraft have been increasingly evident. Thus far, no direct, positive indications of the effects of mining on North Vietnamese water traffic have been noted. Strikes against coastal transshipment points and naval bases increased over the previous period. The cumulative bomb damage has hampered coastal shipments and at Quang Khe has necessitated an over-the-beach cargo operation since July 1966.

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6. (S/NFD) The gradual expansion of fighter aircraft facilities in North Vietnam has probably been tailored to specific air defense needs to counter the ROLLING THUNDER Program. Six airfields can now support MIG operations and one airfield now under construction will be able to when completed. In the event of attacks on the major airfields at Phuc Yen and Kep, the North Vietnamese could still sustain a fighter force -- albeit less effectively -- in the capital area.

7. (S/NFD) The cumulative effects of the air strikes have limited North Vietnam's capability for sustained large scale conventional military operations against South Vietnam. However, the North Vietnamese still retain the capability to support activities in South Vietnam and Laos at present or increased combat levels and force structures.

8. (S/NFD) There has been no evidence in recent weeks to indicate that Hanoi's determination to prosecute the war has declined. Likewise, there is no evidence that the morale of the populace has decreased. However, the increasing hardships being borne by the people have resulted in instances of skepticism of the regime's propaganda line.

9. (S/NFD) Damage inflicted on the North Vietnamese economy by air strikes increased significantly and will have unfavorable repercussions throughout much of the modern industrial

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sector. Damage from the strikes against electric powerplants at Viet Tri, Thai Nguyen, and Hon Gai and possibly at Bac Giang will curtail the supply of power to industry and to the urban areas of Hanoi and Haiphong. Electric power capacity out of operation currently amounts to at least 102,000 kilowatts (55 per cent of the total installed national capacity) and could be as much as 114,000 kilowatts (61 per cent of the national capacity) if the Bac Giang plant is out of operation.

10. (S/NFD) Air strikes against North Vietnam's industrial showpiece -- the Thai Nguyen Iron and Steel Combine -- have damaged one of the country's major war-supporting industries, although the extent of this damage is not yet known. An accurate assessment of the damage to the combine can be made only for the strikes through 26 March. Aerial photography taken after these strikes revealed no significant damage to the productive capability of the combine. However, pilot reports of an air strike on 30 March indicate that the three blast furnaces may have been destroyed. Destruction of the blast furnaces would eliminate the production of pig iron. In addition to possible damage to the blast furnaces, the air strikes have reduced, at least temporarily, the combine's output of fabricated steel products. Despite the increasing disruption of economic activity, the North Vietnamese give no indication of abandoning their programs to expand small-scale industry and to

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plan for postwar economic development.

11. (S/NFD) The bombing continues to have a disruptive influence on agricultural production and fishing. Reports on the food supply are conflicting. Some reports indicate serious shortages while others suggest that supplies are adequate. In no case, however, have there been reports of severe hunger or starvation, or any indication at the present time that the North Vietnamese will not be able to maintain at least the minimum consumption levels.

12. (S/NFD) Soviet merchant shipping to North Vietnam reached an all-time high during the first quarter of 1967 -- all major categories except timber having increased significantly over the first quarter of 1966. Total seaborne imports during March reached the highest volume in three years, a total of 142,400 metric tons. Imports of miscellaneous and general cargoes registered the largest gain over February, but imports of bulk foodstuffs and petroleum continued at the high level of the past few months. There was no significant increase in the average time in port for either tankers or dry cargo ships during February or March despite the record high levels of imports. Seaborne exports continued at a low level because of decreased exports of coal and the continued absence of seaborne exports of apatite.

13. (S/NFD) The high level of petroleum imports that began in December 1966 continued through March. Imports for the month were 27,500 metric tons and total imports for the first quarter of 1967 were about 80,000 metric tons. Consumption of petroleum probably also increased during recent months as a result of increased activity of vehicles and motorized watercraft and additions to inventories of petroleum consuming equipment. Stocks of petroleum in North Vietnam as of the end of March are estimated to have been between 59,000 and 74,000 metric tons, representing between about 100 and 120 days of supply.

14. (S/NFD) Cumulative measurable damage to economic and military facilities and equipment in North Vietnam inflicted by air strikes through March 1967 is estimated at \$232 million. In addition to these costs, there continue to be many other losses to the economy and to the military establishment which cannot be assigned meaningful values.

Effects on Military Targets

1. (S/NFD) The improved flying conditions during late March and early April permitted a significantly higher level of air activity. The preponderance of air strikes was directed against lines of communications (LOC's). Attacks against the highway system increased and a greater amount of damage was inflicted against bridges, bridge approaches, fords, ferries, and causeways. Interdiction activity against rail and waterway targets increased only slightly over the previous period.

2. (S/NFD) Attacks against rail facilities remained at essentially the same tempo as during the previous reporting period. Single strikes were made against the Hanoi-Haiphong and Hanoi-Dong Dang lines; however, it is estimated that both these key rail lines remained fully operational during the month. The Hanoi-Thai Nguyen and Kep-Thai Nguyen lines were open for through rail movement, but previous damage to the yard at Thai Nguyen continues to limit operations on both lines. The destroyed Viet Tri bridge on the Hanoi-Lao Cai line continues to require the ferrying of freight cars across the Riviere Claire. In the south, the Hanoi-Vinh line was subjected to intensive air attacks, and the line was probably closed for through service throughout the month. However, limited operations were possible between major points of interdiction.

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The tramway south of Duc Tho was generally closed to traffic, but a segment between Xom Hoai and Xom Khe was in use by motor trucks with flanged wheels. The spur from Tan Ap toward Mu Gia Pass was also in use during the period. The cumulative effects of the air strikes have severely reduced the throughput capacity of the rail line south of Hanoi. The turn-around time for equipment has increased and the use of equipment is less efficient.

3. (S/NFD) The North Vietnamese have been able to maintain at least limited use of the rail lines, in spite of the damage caused by the bombing, by continuing to develop bypasses for bridges, sidings, and yards. Principal rail crossings on the Hanoi to Dong Dang, Haiphong, and Vinh lines all have provisions for at least one alternate means of crossing in case the original structure becomes unserviceable. Some sites have as many as four alternate crossings.

4. (S/NFD) Strikes against the highway system reached a peak during the first week of April. However, the road network directly related to the military logistics support effort has been maintained in relatively good condition with truck traffic possible on nearly all routes. The bulk of the interdiction effort was against the principal roads south of the 20th Parallel. The throughput capacity of Route 15 continued

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to be severely limited by repeated craterings and seedings with delayed action bombs of a road segment near the Mu Gia Pass. Some motor traffic was observed over this road segment during daylight hours. Truck park and storage facilities farther north along Route 15 have been expanded -- perhaps to stockpile supplies for further shipment southward as the road is repaired. The North Vietnamese continued to employ a large labor force on construction and improvement of inland alternate roads for Route 1A.

5. (S/NFD) The wide dispersal of vehicles and the inefficient operating conditions imposed by the air campaign in the southern part of the country are believed to be taxing present truck transport capability. Slow travel, usually at night, and the separation of trucking elements for shuttle service between numerous transfer points, plus the relatively poor maintenance of equipment, have all dictated employment of a much larger number of vehicles than normally required to move a given quantity of supplies. It is estimated that at least 2,000 trucks are committed to support the military supply effort through the North Vietnam Panhandle and the limited local civil requirements.

6. (S/NFD) Most of the waterborne activity during the period was reported below the 20th Parallel. North Vietnamese efforts to minimize loss and damage to watercraft have been increasingly

evident. Recent photography showed craft dispersed at uniform intervals while traveling on the intra-coastal waterways. Other craft were observed in dispersed anchorage in manmade cuts and inlets parallel to the main channel, and some were observed moored in revetted slips that were being constructed along the river bank.

7. (S/NFD) No direct, positive indications of the effects of mining on North Vietnamese water traffic have yet been noted. A comparison of pre-mining and post-mining traffic counts compiled from aerial photography and pilot sightings evidences no drastic change for the Kien Giang, Song Giang, or Cua Sot. However, the pattern of sightings of watercraft in the Song Ca and Song Ma might indicate the development of bottlenecks.

8. (S/NFD) Strikes against coastal transshipment points and naval bases increased over the previous period -- most occurred between the 18th and 20th Parallels. Storage facilities at Phu Duc and piers at Hai Yen and the Phuc Loi Naval Base were struck repeatedly. Transshipment points at Quang Khe and the Fa Tai Long Island Group were attacked and the Ha Tou naval storage installation was struck. The cumulative bomb damage has hampered coastal shipments and at Quang Khe has necessitated an over-the-beach cargo operation since July 1966.

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9. (S/NFD) The gradual expansion of fighter aircraft facilities in North Vietnam has probably been tailored to specific air defense needs to counter the ROLLING THUNDER Program. The basic North Vietnamese airfield and control apparatus was inadequate at the time of the initial US air strikes in February 1965 -- but it has now grown to considerable proportions, even outpacing the MIG inventory. Six airfields can now support MIG operations and one airfield now under construction will be able to when completed. Hanoi now has the capacity for expanding the MIG inventory and preparing for more aggressive air operations. In the event of attacks on the major airfields at Phuc Yen and Kep, the North Vietnamese could still sustain a fighter force -- albeit less effectively -- in the capital area.

10. (S/NFD) The cumulative effects of the air strikes in North Vietnam have caused multiple management and logistic problems and have limited North Vietnam's capability for sustained large scale conventional military operations against South Vietnam. Hanoi must continue to devote a significant portion of available manpower and material resources to the construction and maintenance of LOC's and the air defense system. These resources are diverted from other activities at the expense of both civil and military needs. However, the North Vietnamese still retain the capability to support activities in South Vietnam and Laos at present or increased combat levels and force structures.

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Leadership and Public Reactions

11. (S/NFD) In the wake of Hanoi's release of the letters between Presidents Johnson and Ho on 21 March, the North Vietnamese leadership intensified its propaganda underscoring the determination of the populace to continue the war until Communist terms for a settlement can be achieved. Hanoi's harsh rejection of U Thant's three point proposal for ending the conflict as well as several hard line statements by the North Vietnamese leadership also brought home to the populace the fact that they will have to endure intensified US bombings for the foreseeable future. At the same time, in an apparent effort to bolster popular morale, the regime released a series of highly favorable accounts of the Communist military "victories" in South Vietnam during the first quarter of 1967.

12. (S/NFD) There has been no evidence in recent weeks to indicate that Hanoi's determination to prosecute the war has declined. Likewise, there is no evidence that the morale of the populace has decreased. Rather, what limited information is provided [REDACTED] indicates that there continues to be no visible signs of discontent or resistance to the regime. The increasing hardships being borne by the people have, however, resulted in instances of skepticism of the the regime's propaganda line. One report has indicated that

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individuals working at the port of Haiphong, while offering no open criticism of the regime, have, nonetheless, expressed their disbelief in the exaggerated claims of US losses in both North and South Vietnam as reported in official propaganda.

Effects on the Economy

13. (S/NFD) Damage inflicted on the North Vietnamese economy by air strikes increased significantly during the reporting period, and will have unfavorable repercussions throughout much of the modern industrial sector. The most telling damage resulted from the strikes against electric powerplants at Viet Tri, Thai Nguyen, and Hon Gai and possibly at Bac Giang although the extent of damage to this plant is not yet known. Loss of these central generating facilities undoubtedly will curtail the supply of power to industry and to the urban areas of Hanoi and Haiphong. Operations probably will be affected at the large Lam Thao superphosphate fertilizer plant; a large paper mill, a chemical plant, and a sugar refinery in the Viet Tri area; the iron and steel combine at Thai Nguyen; and coal mining and processing facilities in Hon Gai and Cam Pha. Since only a small fraction of the electric power capacity destroyed or damaged can be replaced by the use of diesel-driven generating equipment, the auxiliary generating equipment which is available probably will be used only for high priority uses. Electric

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power capacity out of operation currently amounts to at least 102,000 kilowatts (55 per cent of the total installed national capacity) and could be as much as 114,000 kilowatts (61 per cent of the national capacity) if the Bac Giang plant is out of operation. Although the plants can probably be made partially operational in four to eight months, complete restoration will require at least a year for each plant. This can be done only with new infusions of foreign assistance in the form of technicians, equipment, and materials.

14. (S/NFD) The attacks on the powerplants also have eliminated the supplementary supply of power formerly received by Hanoi and Haiphong from the main transmission network. Hanoi now is dependent on one local powerplant which can supply about one-half the city's normal needs. Haiphong is dependent on two local powerplants that probably can supply two-thirds its normal needs.

15. (S/NFD) Air strikes against North Vietnam's industrial showpiece -- the Thai Nguyen Iron and Steel Combine -- have damaged one of the country's major war-supporting industries, although the extent of this damage is not yet known. The Thai Nguyen Combine was originally intended to be an integrated iron and steel facility costing an estimated \$175 million that would eventually produce coke, pig iron, crude steel, and steel products. Before the first

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US attack, the open hearth shop appeared completed externally but was not in operation -- the smoke stacks were capped -- and the building housing the rolling mill was still under construction. The plant was producing pig iron, coke, and possibly some coke by-products and cast iron products. In addition, steel imported from the USSR, some from Japan, and probably some from China was fabricated at the combine. These fabricated products included barges and small watercraft, liquid storage tanks, pipe sections, trusses and columns for buildings, pontoons, and possibly bridge trusses. Much of the fabrication work was being done in the ancillary buildings that were originally designed as part of the integrated steel plant.

16. (S/NFD) An accurate assessment of the damage inflicted on the Thai Nguyen Combine can be made only for the strikes through 26 March at the present time. Aerial photography taken after these strikes revealed no significant damage to the productive capability of the combine. Pilot reports of an air strike on 30 March indicate that the three blast furnaces may have been destroyed, but photography is still not available to confirm this claim. Destruction of the blast furnaces would eliminate the production of pig iron. During 1966, exports of about 40,000 metric tons of pig iron earned North Vietnam

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as much as \$2 million in hard currencies. In addition to possible damage to the blast furnaces, the air strikes have reduced, at least temporarily, the combine's output of fabricated steel products.

17. (S/NFD) Aerial photography of the Nam Dinh Textile Plant reveals that additional damage was inflicted this year, but the damage to the plant's capacity was probably slight because much of the machinery had already been dispersed. Recent photography of the Eight March Textile Mill in Hanoi -- North Vietnam's most modern textile plant -- shows that some preliminary grading operations are underway, an indication that the plant is being expanded. An expansion of this plant was unexpected because there is firm evidence that at least a quarter of its equipment had been dispersed in late 1965 or 1966.

18. (S/NFD) Despite the increasing disruption of economic activity, the North Vietnamese give no indication of abandoning their programs to expand small-scale industry and to plan for postwar economic development. Negotiations with Rumania for a tannin factory are continuing and work on a Rumanian refrigeration installation is about to begin. In addition, an agreement with Bulgaria was signed recently for six workshops of unknown type valued at about \$600,000. North Vietnam continues to send young workers and students to other Communist countries for technical

and academic training and has emphasized that this training is aimed at postwar economic development. An agreement was announced recently for Czechoslovakia to train 2,100 industrial apprentices. The Hanoi regime claims that 20,000 Vietnamese either have left or will soon leave North Vietnam to be trained in other Communist countries.

19. (S/NFD) An increase in the war-supporting role of women was discussed during the reporting period by both the Council of Ministers and the Party Central Committee. Spokesmen stated that the number of female cadres involved in political, administrative, professional, financial, scientific, and technical activities should be increased. North Vietnam has always suffered from an insufficient number of managerial and technical cadres and the military drain-off of these types of male cadres has undoubtedly aggravated the shortage in these areas. Although the role of women in certain activities is to be expanded, North Vietnam does not appear to be suffering from a general manpower shortage.

20. (S/NFD) Recent reports indicate that civil defense efforts are being intensified. The number of first aid and damage repair teams have increased, blackout and air raid warning systems have improved, and additional construction of one-man air raid shelters has been reported in Hanoi. There has also been continued emphasis on evacuation from urban areas and the construction of "combat"

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villages -- villages near targets subject to frequent bombardment -- in the southern part of the country. Inhabitants of combat villages have built communication and shelter trenches that connect dwellings with wells, fields, schools, and even public meeting places. In addition, some of these hamlets and villages are being linked by trenches.

21. (S/NFD) The bombing continues to have a disruptive influence on agricultural production and fishing. Increased emphasis is being given to the cultivation of leafy vegetables, as well as sweet potatoes, as substitutes for the less reliable rice crop. Recent information indicates that the bombing program has caused a decrease in salt water fishing in the Haiphong area and in the southern coastal regions. Reports on the food supply are conflicting. Some reports, [REDACTED]

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[REDACTED] indicate serious shortages while others, [REDACTED] suggest that supplies are adequate. In no case, however, have there been reports of severe hunger or starvation, or any indication at the present time that the North Vietnamese will not be able to maintain at least the minimum consumption levels.

22. (S/NFD) Soviet merchant shipping to North Vietnam reached an all-time high during the first quarter of 1967 -- all major categories except timber having increased significantly over the first quarter of 1966. Total seaborne imports during March,

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142,400 metric tons, were the highest monthly volume in three years. The previous high was 113,500 metric tons delivered in February. Imports of miscellaneous and general cargoes registered the largest gain over February, but imports of bulk foodstuffs and petroleum continued at the high level of the past few months. Miscellaneous and general cargoes consisted largely of metals and metal products from the USSR. Also included were trucks, barges, cranes, and bulldozers from Poland, machinery and vehicles from Rumania, and lighters from North Korea. Seaborne imports originating in Free World countries constituted less than one per cent of the total. There was no significant increase in the average time in port for either tankers or dry cargo ships during February or March despite the record high levels of imports. Seaborne exports continued at a low level because of decreased exports of coal and the continued absence of seaborne exports of apatite. Exports of cement exceeded normal levels, however.

23. (S/NFD) The increased level of petroleum imports which began in December 1966 continued in March. Imports for the month were 27,500 metric tons and total imports for the first quarter of 1967 were about 80,000 metric tons. The continued high level of petroleum imports (in spite of limitations in storage capacity), additions to inventories of petroleum consuming equipment, and evidence of greater activity of vehicles and motorized watercraft

suggest that consumption of petroleum by the North Vietnamese has increased in recent months -- probably reaching 18,000 to 20,000 metric tons a month.\* Average monthly consumption in the last half of 1966 is estimated to have been between 16,000 and 17,000 metric tons. Stocks of petroleum in North Vietnam as of the end of March are estimated to have been between 59,000 and 74,000 metric tons, representing between about 100 and 120 days of supply.\*\*

24. (S/NFD) There was no significant damage to bulk petroleum storage facilities during the reporting period. Serviceable storage tanks still standing at Haiphong are being dismantled and there are no apparent attempts to restore the destroyed tanks. The Haiphong facility is being used, however, for off-loading petroleum from barges directly into rail tank cars by using the serviceable pipelines at the terminal. Identification of a petroleum equipment depot in the Haiphong area, where fabrication

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\* Normal current consumption is estimated tentatively to be 18,200 metric tons per month. Because of the abnormally high level of activity observed during TET, monthly consumption in the first quarter of 1967 may have averaged about 20,000 metric tons.

\*\* This range reflects the uncertain origin of 14,600 metric tons of petroleum shipped from Communist China during the first quarter of 1967. It cannot be determined whether this petroleum represents part of the 34,000 metric tons diverted to China in mid-1966 (previously considered to have been transshipped by rail to North Vietnam in 1966) or represents, in fact, petroleum of Chinese origin. The upper end of the range considers the shipments from China this year to represent petroleum of Chinese origin. The lower end of the range assumes that the shipments represent part of the petroleum diverted to China in 1966.



of small tanks suitable for dispersed tank sites is taking place, provides further evidence of Hanoi's increased emphasis on dispersing petroleum storage facilities.

25. (S/NFD) Cumulative measurable damage to economic and military facilities and equipment in North Vietnam inflicted by air strikes through March 1967 is estimated at \$232 million. (See Tab B.) Most of the cost during March is attributed to damage inflicted on economic facilities and equipment. In addition to these costs, there continue to be many other losses to the economy and to the military establishment which cannot be assigned meaningful values.

**SECRET-NO FOREIGN DISSEM**RESULTS OF STRIKES ON NVN TARGETS<sup>a/</sup> THRU 8 APRIL 1967

TABLE 360

Targets	Targets		Targets Struck		No. Attacks	Strike Sorties	% Of National g/ Capacity Destroyed or in- active because of air strikes.
	National <sup>c/</sup> Capacity (X 1000)	JCS <sup>d/</sup> Targeted No(*) %	<sup>d/</sup> No(*)	<sup>e/</sup> %			
Fixed Targets							
Barracks	443 men	65 41.08	50	25.3	305	2618	23.92
Ammo Depots	112.6 MT	18 100	16	87.5	57	1234	70.0
POL Storage *	133.5 MT	13 100	13	100	77	658	86.5
Supply Depots	10550 SqFt	29 42.48	21	44.4	61	698	17.05
Power Plants	187 KW	20 94.5	10	61.0	45	352	46.0
Maritime Ports	7.8 ST/Dy	8 95	6	44.	27	235	13.1
Railroad Yards	33.7 ST/Dy	4 78	3	54	40	320	19.6
Explosive Plant	1 MT	1 100	1	100	3	28	71
Iron and Steel	300MT (PIG)	1 100	1	100	9	135	**
Airfields	23	11	4	19 <sup>d/</sup>	13	372	19
Naval Bases	15	5	3	42 <sup>d/</sup>	24	230	19.5
Bridges	1,529	61	50		320	2895	44.3 (of those tgtd)
Commo Install	45	5	2		2	15	20
Radar Sites	160	5	5		73	430	25.0
SAM Sites	134		58		112	388	
Locks & Dams	43	8	2	10.6	2	10	5.3
Ferries	34		11		7	44	

\* JCS targets only; does not include dispersed storage.

Total Sorties:	10,872	Results	f/
Armed Recce Sorties		Destroyed	Damaged
111,783	Vessels	5248	9862
	Vehicles	2969	3255
	RR Stock	905	1869

\*\* 15% of target area destroyed; no visible damage to critical units affecting pig iron capacity.

a/Assessments are based on best information received, will be refined as more accurate information becomes available.

b/Strike plus flak suppression sorties. Some applied to multiple targets; in this summary assigned to principal target.

c/National capacity in 1,000's where measurement shown.

d/Percentages of national capacity where appropriate.

e/Also numerous attacks during armed recce and other missions.

f/Also numerous installations, AA sites, bridges, etc., attacked and road and rail cuts made.

g/Per cent inactive due to dismantling or abandonment of facilities as a result of air strikes.

(\*) These columns are not additive, since the number of installations, both targeted and struck in some cases, apply to more than one category of targets (i.e., barracks, supply and ammo depots).

NOTE: For comparative purposes.

US world-wide ammo storage capacity is 6,936,000 metric tons (CONUS 5,719,000 MT).

US world-wide military POL storage capacity is 15,452,000 MT; national US commercial capacity is 151,325,000 MT; approximate average \$ value of 1 MT of POL products is \$28.

US world-wide military supply depot covered storage space is 137,100,000 sq. ft.

(CONUS 121,300,000 sq. ft.).

Total kilowatt capacity of power plants serving metropolitan areas: New York - 7.6 million; Chicago - 6 million; Washington (DC and Md/suburbs only) - 2.4 million.

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TAB A

Value of Damage to Economic and Military Facilities and  
 Equipment Attacked Under the ROLLING THUNDER Program  
 1965 Through March 1967

<u>Economic Facilities and Equipment</u>		<u>Military Facilities and Equipment</u>	
<u>Direct Losses</u>	<u>Million US \$</u>	<u>Direct Losses</u>	<u>Million US \$</u>
Railroad/Highway Bridges	24.5 <sup>a/b/</sup>	Barracks	18.8 <sup>a/</sup>
Transportation Equipment	38.9	Ammunition Depots	4.8 <sup>a/</sup>
Electric Power Plants	17.5 <sup>a/</sup>	Supply Depots	4.0 <sup>a/</sup>
Petroleum	6.9 <sup>a/</sup>	Airfields	0.4
Manufacturing Facilities	4.0 <sup>a/</sup>	Radar and Communications	
Railroad Yards	2.1 <sup>a/</sup>	Sites	2.8
Maritime Ports	1.5	SAM Sites	8.2 <sup>a/</sup>
Miscellaneous Armed		Naval Bases	1.6 <sup>a/</sup>
Reconnaissance	1.4	Aircraft	31.6
		Naval Craft	8.1
SUBTOTAL, Direct Losses	96.8	Miscellaneous Armed	
		Reconnaissance	5.6
<u>Indirect Losses</u>		TOTAL, Direct Losses	85.9
Exports	18.8		
Agriculture <sup>c/</sup>	25.5		
Fishing	5.0		
		<u>TOTAL</u>	
SUBTOTAL, Indirect Losses	49.3	<u>Million US \$</u>	
TOTAL, Direct and Indirect	146.1	Economic	146
		Military	86
		TOTAL	232 <sup>d/</sup>

- a/ Estimate is incomplete because of inadequate post-strike photography.  
 b/ Of the total, \$4.0 million is estimated to have been expended to date on the repair of damaged and destroyed bridges and \$20.5 million is estimated for complete restoration in the future of bridges damaged or destroyed. In addition, \$1.3 million would be required to make temporary repairs to presently unrepai red bridges.  
 c/ It should be noted that losses of agricultural crops are arbitrarily attributed entirely to the indirect effects of the bombing. An unknown part of these losses is in fact due to weather and other natural causes.  
 d/ Excluding the cost of trucks destroyed and damaged in Laos and economic and military facilities and equipment destroyed and damaged by US naval operations along the coast of southern North Vietnam.

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<b>THE WHITE HOUSE:</b>	
Vice President	1 Cy
Gen Maxwell Taylor	1 Cy
Mr. Bromley Smith	5 Cys
<b>DEFENSE:</b>	
SECDEF	2 Cys
ASST SECDEF (ISA)	2 Cys
ASST SECDEF (Systems Analysis)	2 Cys
ASST SECDEF (PA)	1 Cy
BUREAU OF THE BUDGET	1 Cy
TREASURY (Secretary)	1 Cy
USIA	1 Cy
AID	1 Cy
NASA	1 Cy
NSA	5 Cys
STATE	18 Cys
AEC	1 Cy
FBI	1 Cy
NIC	1 Cy
ACDA	1 Cy
CHAIRMAN, JCS	1 Cy
DIRECTOR, JOINT STAFF	1 Cy
J-1	1 Cy
J-3	2 Cys
J-4	1 Cy
J-5	1 Cy
J-6	1 Cy
SACSA	1 Cy
NMCC	3 Cys
<b>ARMY:</b>	
CHIEF OF STAFF	2 Cys
DCSOPS	1 Cy
ACSFOR	1 Cy
ACSI	1 Cy
ACSI-CI	1 Cy
ACSI-Eastern	1 Cy
STAG	1 Cy

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**NAVY:**

CHIEF OF NAVAL OPERATIONS	2 Cys
DNI	1 Cy
OP-921E	1 Cy
OP-922Y1	1 Cy
OP-922Y2	1 Cy
OP-92B1	1 Cy

**AIR FORCE:**

CHIEF OF STAFF	2 Cys
ACS,I/USAF	1 Cy
AFNINDE	6 Cys
AFNIEBB	1 Cy
AFISI (Spec Investigation)	1 Cy
AUL (Air Univ Library)	1 Cy

**MARINE CORPS:**

COMMANDANT	1 Cy
G-2	1 Cy

CINCPAC	2 Cys
CINCPACAF	1 Cy
CINCUSARPAC	1 Cy
CINCPACFLT	1 Cy
COMUSMACV	2 Cys
7AF	2 Cys
COMSEVENTHFLT	1 Cy
COMATKCARSTRIKEFORSEVENTHFLT (CTF 77)	1 Cy
CINCLANT	1 Cy
CINCSRIKE	1 Cy
CINCSAC	1 Cy
SAC 544	1 Cy
CINCTAC	1 Cy
AFSTRIKE	1 Cy
CONTIC	1 Cy
CINCALCOM	1 Cy
CINCEUR	1 Cy
CINCUSAREUR	1 Cy
CINCUSAFE	1 Cy
CINCNAVEUR	1 Cy
CINCCONAD	1 Cy
CIA	125 Cys

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DIA:

DIADR	1 Cy
DIADD	1 Cy
DIASC-1	1 Cy
JS	1 Cy
CO-2C	1 Cy
AP	1 Cy
AP-2	1 Cy
AP-2C2	10 Cys
AP-2D1	1 Cy
AP-2D2	1 Cy
AP-3	1 Cy
AP-4	1 Cy
AP-4A	1 Cy
AP-4A2 (Pent)	6 Cys
AP-4A2 (AHS)	4 Cys
AP-4B4	2 Cys
AP-4C	3 Cys
AP-7	2 Cys
AP-8	2 Cys
XX	1 Cy
JT	1 Cy

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